CLAIMS

1. An ion-implantation machine, comprising:

an implantation chamberhaving a vent inlet;

a vacuum pump connected to said implantation chamber; and

means for connecting said vent inlet to a source of a fluid containing oxygen.

2. The ion-implantation machine according to claim 1 wherein said fluid containing oxygen is environmental air.

3. The ion-implantation machine according to claim 2 wherein said means for connecting comprise a pipe, which has an open inlet and an outlet connected to said vent inlet.

4. The ion-implantation machine according to claim 3 wherein said pipe comprises flow-rate control means.

5. The ion-implantation machine according to claim 4, further comprising a protection valve arranged between said vacuum pump and said implantation chamber, and a control unit, controlling said protection valve, wherein said flow-rate control means comprise a vent valve controlled by said control unit.

6. The ion-implantation machine according to claim 5 wherein said pipe further comprises a flow-rate measuring valve.

7. The ion-implantation machine according to claim 5 wherein said pipe further comprises a particulate filter.

8. The ion-implantation machine according to claim 6 wherein said control unit comprises means for inhibiting said vent valve when the protection valve is open.

9. The ion-implantation machine according to claim 8 wherein said control unit comprises: an electronic control module, including a control inlet, a first valve driving branch controlling said protection valve, and an auxiliary driving branch controlling said vent valve; and a switching module, having an inlet connected to said control inlet, a first outlet connected to said first valve driving branch, and a second outlet connected to said auxiliary driving branch.

10. A method for controlling an ion-implantation machine, comprising:

implanting heavy ionic species in an implantation chamber kept in vacuum conditions; and

decontaminating said implantation chamber by supplying a fluid containing oxygen into the implantation chamber.

11. The control method according to claim 10 wherein during said step of implanting the implantation chamber is connected to a cryogenic pump, and wherein before said step of decontaminating, said cryogenic pump is disconnected from said implantation chamber.

12. The control method according to claim 10 wherein said step of decontaminating comprises supplying environmental air to said implantation chamber.

13. The control method according to claim 12 wherein said step of supplying environmental air comprises connecting a vent inlet of said implantation chamber to a vent pipe having a flow-rate metering valve.

14. The control method according to claim 10 wherein said heaving ionic species are first ionic species and said step of decontaminating is performed during crossover between said heavy ionic species and second ionic species lighter than said heavy ionic species.

15. The control method according to claim 14 wherein said first ionic species are chosen from among arsenic, antimony and indium.

16. A process for manufacturing electronic devices, comprising:

positioning a semiconductor wafer in an implantation chamber kept in vacuum conditions;

implanting heavy ionic species in the wafer while the wafer is in the implantation chamber kept in vacuum conditions; and

decontaminating said implantation chamber by supplying a fluid containing oxygen into the implantation chamber.

17. The process for manufacturing according to claim 16 wherein said decontaminating comprises supplying environmental air to said implantation chamber.

18. The process for manufacturing according to claim 16 wherein said decontaminating is performed during crossover between said heavy ionic species and ionic species lighter than said heavy ionic species.

19. The process for manufacturing according to claim 16 wherein said electronic devices are flash memories, and said decontaminating is followed by implanting threshold modification ions and growing a tunnel oxide layer.

20. The process for manufacturing according to claim 19 wherein said heavy ionic species comprise arsenic, and said implanting threshold modification ions comprises implanting boron ions.

21. An ion-implantation machine, comprising:

an implantation chamber;

a vacuum pump;

an oxygen source;

a first valve positioned between the vacuum pump and the implantation chamber;

a second valve positioned between the oxygen source and the implantation chamber; and

a controller coupled to the first and second valves and structured to alternately open the first valve to create a vacuum in the implantation chamber during a dopant implant phase and open the second valve to provide oxygen to the implantation chamber during a decontamination phase.

22. The ion-implantation machine according to claim 21 wherein oxygen source includes an input port connected to environmental air.

23. The ion-implantation machine according to claim 21 wherein said controller comprises means for inhibiting said first valve when the second valve is open.

24. The ion-implantation machine according to claim 21 wherein said controller comprises:

an electronic control module that includes a control line, a first valve driving branch controlling said first valve, and second driving branch controlling said second valve; and

a switching module having an input connected to said control line, a first output connected to control said first valve driving branch, and a second output connected to control said second driving branch.